**WATER RESOURCES RESEARCH GRANT PROPOSAL**

**Project ID**: WY1781

**Title**: Erosion Potential Model Development and Channel Monitoring

**Focus Categories**: Geomorphological and Geochemical Processes, Management and Planning

**Keywords**: GIS, Coal bed methane, Channel erosion

**Start Date**: 03/01/2001

**End Date**: 02/28/2002

**Federal Funds**: $14,864

**Non-Federal Matching Funds**: $35,700

**Congressional District**: 1

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**Abstract**

Coal bed methane (CBM) development in the Powder River (structural) Basin (PRB), located in northeast Wyoming, has been occurring at an increasing rate since about 1990. As of November 1999, 3,041 CBM wells had been drilled or spudded in the PRB. At that time the U.S. Bureau of Land Management approved a plan to develop 5,000 new coal bed methane wells and related production facilities. The process of extracting coal bed methane involves drilling a well into the coal seam and then pumping water out of the well to create a pressure gradient that causes the methane to flow towards the well. The gas and water separate in the well. The gas is sent to a pipeline and the water is reinjected, stored in a reservoir, discharged into surface drainages, or otherwise disposed of. There is great potential for CBM produced water to cause sedimentation and erosion in affected stream channels and tributaries. Therefore, an analytical model is currently being developed, in ArcView (a geographic information system program), which will identify the erosion potential of channels carrying discharges from CBM wells. The proposed project will allow that effort to continue. The proposed project also involves continued monitoring of channel erosion in a drainage basin in which significant CBM development is expected. The channel monitoring effort has thus far provided baseline data that will be compared with data to be collected in the future. The channel monitoring data will also be used to evaluate the analytical model and study channel processes in general.